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FIG. 1A

ggggttgttata gatatttttc ctttggaaaga aatactgagc accaaggctg ag atg aca 58
Met Thr
1

ctg aag tat tta tgg ctg gtg gcc ctc gtg gct cta tac att tca ccc	106	
<u>Leu Lys Tyr Leu Trp Leu Val Ala Leu Val Ala Leu Tyr Ile Ser Pro</u>		
5	10	15

atc cag tct cag aac tgt gtg tat ctg gat cat acc atc ttg gaa aac	154	
<u>Ile Gln Ser Gln Asn Cys Val Tyr Leu Asp His Thr Ile Leu Glu Asn</u>		
20	25	30

atg aaa ctt ctg agc agc atc agg acc acc ttt ccc tta aga tgt cta	202		
<u>Met Lys Leu Leu Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg Cys Leu</u>			
35	40	45	50

aaa gat atc acg gat ttt gag ttt cct caa gag att ctg ctg tac gtc	250	
<u>Lys Asp Ile Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val</u>		
55	60	65

cag cat gtg aaa aag gac ata aag gca gtc acc tat cat ata tct tct	298	
<u>Gln His Val Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser</u>		
70	75	80

ctg gcg cta att att ttc agt ctt aaa gac tcc atc tcc ctg gcg aca	346	
<u>Leu Ala Leu Ile Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr</u>		
85	90	95

gag gaa cgc ttg gaa cgt atc aga tcg gga ctt ttc aaa caa gtg cag	394	
<u>Glu Glu Arg Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln</u>		
100	105	110

caa gct cga gag tgc atg gta gac gag gag aac aac acg gag gag	442		
<u>Gln Ala Arg Glu Cys Met Val Asp Glu Asn Lys Asn Thr Glu Glu</u>			
115	120	125	130

gac agt aca tca caa cat cct cac tca gag ggc ttc aag gca gtc tac	490	
<u>Asp Ser Thr Ser Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr</u>		
135	140	145

ctg gaa ttg aac aag tat ttc ttc aga atc aga aag ttc ctg gta aat	538	
<u>Leu Glu Leu Asn Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn</u>		
150	155	160

aag aaa tac agt ttc tgt gcc tgg aag att gtc gtg gtg gaa ata aga	586	
<u>Lys Lys Tyr Ser Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg</u>		
165	170	175

aga tgt ttc agt ata ttt tac aaa cta ctc aac atg aat tgagaatcat	635	
<u>Arg Cys Phe Ser Ile Phe Tyr Lys Leu Leu Asn Met Asn</u>		
180	185	190

ccagcttcaa gcaagaactt agatagaagt tgtgactgct caaatgtccc caagaacgct 695

FIG. 1B

tgattctaag gctattgcga gtctgctgct acacacttcg gacgcaagac ttttcaaggt 755
cagggttcaa ggtagtacag tcaaaggaag tcttatgtta agcaaaagaa aaatttcagt 815
ggaaaaagcta gcagaaaatgt caacttgtca aaaaaacaac ttatggatta tggcattgac 875
gttacttagca aaaaaataa aacaaaaaaaaa aacaaaaaaaaa 913

FIG. 2A

aagcttaatt taacaaaatt ggaaaaacct aaactatact gtgctctgg gacctagcaa 60
 tcaaataatc acagtcattt ggtcaatgtc tatgattaac tcaatgagac aggatgttg 120
 gctatagcac caggtacaaa aaatatattt tcatgaagga tcactccctc ttatgtaata 180
 gatgggtg agtgagttag tgagttagt catggactca cagtttgg ctttctgaaa 240
 taccctgcat cagtcttgtt atgatgattc cttagtgctg ggatggatca tccaggcatt 300
 taaggtaaca cgatggtaat tcttgctca ttttcaggg aaaaaaaaaa gttatcactt 360
 ccaaagtccg catagtcacc cgaagtaaaa aaaaaaaaaa aaaaaaaaaaag cctcagaggc 420
 aaaggaaagg ggccgcaacc ttggtaact gtgaaatgac gaatgagaaa actcctcctg 480
 ctgaagatat tcaggtatat aaaggcacat gaaggaaac tcaaaacatc attgtcatat 540
 acacatcttc tggattttt agcttgcaaa aaaa atg agc acc aaa cct gat atg 595
 Met Ser Thr Lys Pro Asp Met
 1 5

att caa aag tgt ttg tgg ctt gag atc ctt atg ggt ata ttc att gct	643
<u>Ile Gln Lys Cys Leu Trp Leu Glu Ile Leu Met Gly Ile Phe Ile Ala</u>	
10 15 20	
ggc acc cta tcc ctg gac tgt aac tta ctg aac gtt cac ctg aga aga	691
<u>Gly Thr Leu Ser Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg</u>	
25 30 35	
gtc acc tgg caa aat ctg aga cat ctg agt agt atg agc aat tca ttt	739
<u>Val Thr Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe</u>	
40 45 50 55	
cct gta gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa gag	787
<u>Pro Val Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu</u>	
60 65 70	
ttt ctg caa tac acc caa cct atg aag agg gac atc aag aag gcc ttc	835
<u>Phe Leu Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe</u>	
75 80 85	
tat gaa atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc ttc	883
<u>Tyr Glu Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe</u>	
90 95 100	
aaa tat tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt gat	931
<u>Lys Tyr Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp</u>	
105 110 115	
cag caa gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat gaa	979
<u>Gln Gln Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu</u>	
120 125 130 135	

FIG. 2B

aat gaa gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca gaa 1027
Asn Glu Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu
140 145 150

gcc agg gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc cac 1075
Ala Arg Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His
155 160 165

agg ata gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc tgg 1123
Arg Ile Asp Asn Phe Leu Lys Glu Lys Tyr Ser Asp Cys Ala Trp
170 175 180

gag att gtc cga gtg gaa atc aga aga tgt ttg tat tac ttt tac aaa 1171
Glu Ile Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys
185 190 195

ttt aca gct cta ttc agg agg aaa taaggtatat ttttggatt aaaattcctt 1225
Phe Thr Ala Leu Phe Arg Arg Lys
200 205

ttccctccga aatctcttcc tccttctcct cctccatctt ctttttaagg attgttgtgc 1285

tgtcctgtaa gcctgtcctc agttggactg gtagcctcg aacatcaggg acactcacct 1345

ctctaaggag aggtaatgcc aaccatcctc agggtgacca agagtctcct tagaaagtct 1405

ttaagacatt tttaaaggaa taagattccc tctccgtctt cttctattct ctcttgctct 1465

tttctgtggc cattttgaaa gagcttgct atatatacca cctgtggact tcaccaagac 1525

aatggctaga ggatagggag cagagaatgt tgcaaaatgg taacatttca atgacttaac 1585

tgtttgctg ccaagggtgc ttatcctatg aaaattcagc acattaaaag agcttataaca 1645

tgctccctag agtcaatact cttgcatttt cccccctcctg ctcggggggaa aaaaggttga 1705

catttctggc ccatttcctt ctcagcttgg tttgtttgaa ttgatgcttgg tggaatggta 1765

tttcattact ttaagagtga agatccatag tggaaatttggaa tggatggtttga aatttagacga 1825

ccattaagct t 1836

FIG. 3

	1	50
huIFN-L	MSTKPDMIQK CLWLEILMGI FIAGTLSLDC NLLNVHLRRV TWQNLRLHSS	
raIFN-L	~~~~~MTLK YLWLVALVAL YISPIQSQNCVYLDHT ILENMKLLSS	
huIFN-E	~~~~~MTNK CLLQIALLC FSTTALSMSY NLLGFLQRSS NFQCQKLLWQ	
cons	-----MT-K CLWL-AL--- FI---LS--C NLL-V-LR-- --QN-KLLSS	
	51	100
huIFN-L	MSNSFPVECL RENIAFELPQ EFLQYTQPMK RDIKKAFYEM SLQAFNIFS.	
raIFN-L	IRTTFPLRCL KDITDFEFPQ EILLYVQHVK KDIKAVTYHI SSLALIIFSL	
huIFN-E	LNGRLEY.CL KDRMNFDIPE EIKQLQQFQK EDAALTIYEM LQNIFAIFRQ	
cons	----FP--CL KD---FE-PQ EILQY-Q--K -DIK---YEM S--AF-IFS-	
	101	150
huIFN-L	QHTFKYWKER HLKQIQIGLD QQAEYLNQCL EEDENENEDM KEMKENEMKP	
raIFN-L	KDSISLATEE RLERIRSGLF KQVQQARECM VDEENKNTE. .EDSTSQHPH	
huIFN-E	DSSSTGWNET IVERNLLANVY HQINHLKTVL .EEKLEKEDF TRGK.....	
cons	--S---W-E- -LE-I--GL- -Q---L--CL -EEENENED- -E-K-----	
	151	200
huIFN-L	SEARVPQLSS LELRRYFHRI DNFLKEKKYS DCAWEIVRVE IRRCLYYFYK	
raIFN-L	SEGFI. KAVY LEIWKYYFRI RKFLVNKKYS FCAWKIVVVE IRRCFSIFYK	
huIFN-ELMSS LHLKRYYGRJ LHYLKAKEYS HCAWTIVRVE ILRNFYFINR	
cons	SE-----SS LEL-RYF-RI --FLK-KKYS -CAW-IVRVE IRRCFY-FYK	
	201	
huIFN-L	FTALFRRK	
raIFN-L	LLNMN---	
huIFN-E	LTGYLRN~	
cons	LT---R--	

FIG. 4

cat atg tgt gta tat ctc gat cat act atc ttg gag aat atg aaa ctt Met Cys Val Tyr Leu Asp His Thr Ile Leu Glu Asn Met Lys Leu	1 5 10 15	48
ctg agc agc atc cgt acc acc ttt cct ctg cgt tgt ctg aaa gat atc Leu Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg Cys Leu Lys Asp Ile	20 25 30	96
acg gat ttt gag ttt cct caa gag att ctg ctg tac gtc cag cat gtg Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val Gln His Val	35 40 45	144
aaa aag gac ata aag gca gtc acc tat cat ata tct tct ctg gcg cta Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu	50 55 60	192
att att ttc agt ctt aaa gac tcc atc tcc ctg gcg aca gag gaa cgc Ile Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg	65 70 75	240
ttg gaa cgt atc aga tcg gga ctt ttc aaa caa gtg cag caa gct cga Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg	80 85 90 95	288
gag tgc atg gta gac gag gag aac aag aac acg gag gag gac agt aca Glu Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr	100 105 110	336
tca caa cat cct cac tca gag ggc ttc aag gca gtc tac ctg gaa ttg Ser Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr Leu Glu Leu	115 120 125	384
aac aag tat ttc ttc aga atc aga aag ttc ctg gta aat aag aaa tac Asn Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr	130 135 140	432
agt ttc tgt gcc tgg aag att gtc gtg gtg gaa att cgt cgt tgt ttc Ser Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Cys Phe	145 150 155	480
agt att ttt tac aaa ctg ctg aac atg aat taatggatcc Ser Ile Phe Tyr Lys Leu Leu Asn Met Asn	160 165	520

FIG. 5

cat atg tgt gta tat ctc gat cat act atc ttg gag aat atg aaa ctt	48
Met Cys Val Tyr Leu Asp His Thr Ile Leu Glu Asn Met Lys Leu	
1 5 10 15	
ctg agc agc atc cgt acc acc ttt cct ctg cgt tgt ctg aaa gat atc	96
Leu Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg Cys Leu Lys Asp Ile	
20 25 30	
acg gat ttt gag ttt cct caa gag att ctg ctg tac gtc cag cat gtg	144
Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val Gln His Val	
35 40 45	
aaa aag gac atc aag gca gtc acc tat cat atc tct tct ctg gcg ctg	192
Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu	
50 55 60	
att att ttc agt ctt aaa gac tcc atc tcc ctg gcg aca gag gaa cgc	240
Ile Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg	
65 70 75	
ttg gaa cgt atc cgt tct ggt ctt ttc aaa caa gtg cag caa gct cgt	288
Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg	
80 85 90 95	
gag tgc atg gta gac gag gag aac aag aac acg gag gag gac agt aca	336
Glu Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr	
100 105 110	
tca caa cat cct cac tca gag ggc ttc aag gca gtc tac ctg gaa ttg	384
Ser Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr Leu Glu Leu	
115 120 125	
aac aag tat ttc ttc cgt atc cgt aag ttc ctg gta aat aag aaa tac	432
Asn Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr	
130 135 140	
agt ttc tgt gcc tgg aag att gtc gtg gtg gaa att cgt cgt tct ttc	480
Ser Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Ser Phe	
145 150 155	
agt att ttt tac aaa ctg ctg aac atg aat taatggatcc	520
Ser Ile Phe Tyr Lys Leu Leu Asn Met Asn	
160 165	

FIG. 6

tctagaaaagg aggaataaca t atg tgt aac ctg ctg aac gtt cac ctg cgt Met Cys Asn Leu Leu Asn Val His Leu Arg 1 5 10	51
cgt gtt acc tgg caa aat ctg aga cat ctg agt agt atg agc aat tca Arg Val Thr Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser 15 20 25	99
ttt cct gta gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa Phe Pro Val Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln 30 35 40	147
gag ttt ctg caa tac acc caa cct atg aag agg gac atc aag aag gcc Glu Phe Leu Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala 45 50 55	195
ttc tat gaa atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc Phe Tyr Glu Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr 60 65 70	243
ttc aaa tat tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt Phe Lys Tyr Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu 75 80 85 90	291
gat cag caa gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat Asp Gln Gln Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn 95 100 105	339
gaa aat gaa gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca Glu Asn Glu Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser 110 115 120	387
gaa gcc agg gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc Glu Ala Arg Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe 125 130 135	435
cac agg ata gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc His Arg Ile Asp Asn Phe Leu Lys Glu Lys Tyr Ser Asp Cys Ala 140 145 150	483
tgg gag att gtc cga gtg gaa atc cgt cgt tgc ctg tac tac ttt tac Trp Glu Ile Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr 155 160 165 170	531
aaa ttt acc gct ctg ttc cgt cgt aaa taatggatcc Lys Phe Thr Ala Leu Phe Arg Arg Lys 175	568

FIG. 7

tctagaaagg aggaataaca t atg tgt aac ctg ctg aac gtt cac ctg cgt Met Cys Asn Leu Leu Asn Val His Leu Arg 1 5 10	51
cgt gtt acc tgg caa aat ctg aga cat ctg agt agt atg agc aat tca Arg Val Thr Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser 15 20 25	99
ttt cct gta gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa Phe Pro Val Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln 30 35 40	147
gag ttc ctg caa tac acc caa cct atg aag agg gac atc aag aag gcc Glu Phe Leu Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala 45 50 55	195
ttc tat gaa atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc Phe Tyr Glu Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr 60 65 70	243
ttc aaa tat tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt Phe Lys Tyr Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu 75 80 85 90	291
gat cag caa gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat Asp Gln Gln Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn 95 100 105	339
gaa aat gaa gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca Glu Asn Glu Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser 110 115 120	387
gaa gcc agg gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc Glu Ala Arg Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe 125 130 135	435
cac agg ata gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc His Arg Ile Asp Asn Phe Leu Lys Glu Lys Tyr Ser Asp Cys Ala 140 145 150	483
tgg gag att gtc cga gtg gaa atc cgt cgt tct ctg tac tac ttt tac Trp Glu Ile Val Arg Val Glu Ile Arg Arg Ser Leu Tyr Tyr Phe Tyr 155 160 165 170	531
aaa ttt acc gct ctg ttc cgt cgt aaa taatggatcc Lys Phe Thr Ala Leu Phe Arg Arg Lys 175	568

FIG. 8

cat atg ctg gac tgt aac ctg ctg aac gtt cac ctg cgt cgt gtt acc His Met Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr	48
1 5 10 15	
 tgg caa aat ctg aga cat ctg agt agt atg agc aat tca ttt cct gta Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val	96
20 25 30	
 gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa gag ttt ctg Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu	144
35 40 45	
 caa tac acc caa cct atg aag agg gac atc aag aag gcc ttc tat gaa Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu	192
50 55 60	
 atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc ttc aaa tat Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr	240
65 70 75 80	
 tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt gat cag caa Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln	288
85 90 95	
 gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat gaa aat gaa Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu	336
100 105 110	
 gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca gaa gcc agg Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg	384
115 120 125	
 gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc cac agg ata Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile	432
130 135 140	
 gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc tgg gag att Asp Asn Phe Leu Lys Glu Lys Tyr Ser Asp Cys Ala Trp Glu Ile	480
145 150 155 160	
 gtc cga gtg gaa atc cgt cgt tgc ctg tac tac ttt tac aaa ttt acc Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr	528
165 170 175	
 gct ctg ttc cgt cgt aaa taatggatcc Ala Leu Phe Arg Arg Lys	556
180	